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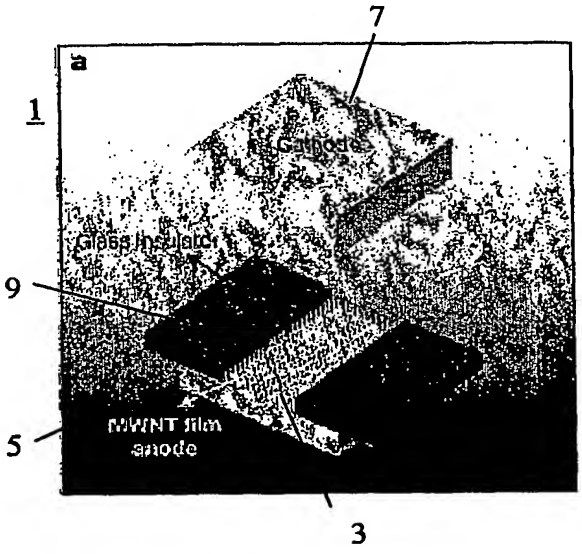
(54) Title: MINIATURIZED GAS SENSORS FEATURING ELECTRICAL BREAKDOWN IN THE VICINITY OF CARBON NANOTUBE TIPS



(57) Abstract: An ionization gas sensor includes a first electrode and a second electrode, such as cathode and anode electrodes. The second electrode is a carbon nanotube film having a carbon nanotube density such that the film behaves as a conducting sheet electrode. The sensor also includes a voltage source electrically connected to the first and to the second electrodes. The voltage source is adapted to generate an electric field near tips of carbon nanotubes in the carbon nanotube film which induces electrical breakdown of an analyte gas, which leads to a self-sustaining inter-electrode arc discharge.

WO 2004/059298 A1